Training programme for rural communities and panchayats, Jhabua

Location: CSE conducted workshops in 4 villages of Jhabua district. The district of Jhabua situated in the south-western corner of Madhya Pradesh is home to the Bhil adivasi or indigenous people constituting 86.8 % of the total population (Census, 2001). The district forms an unique agro-climatic zone called the Jhabua Hills in the southern part where it is part of the Vindhya hill ranges and drains into the River Narmada. The northern part of the district forms the undulating hilly edge of the Malwa Plateau and the eponymous agro-climatic zone and drains into the River Mahi. The topsoils are mostly light and lateritic with some fertile patches of the medium black variety. The underlying rock structure has low primary porosity and permeability and so the groundwater aquifers have poor water retention capacity. Thus the terrain and the underlying geological structure together result in most of the average annual rainfall of 829 mm running off during the monsoons and consequently the net groundwater availability is only 519 million cubic meters per year (CGWB, 2006).

The villages were all in Petlawad block and all the villages suffer from acute water scarcity. Participants consisted of panchayat officials, Village Water and Sanitation Committee (VWSC) members, anganwadi members and other community members

Partner: CSE collaborated with the NGO Vasudha Vikas Sansthan, based in Dhar to undertake these workshops. Vasudha has been working for the past 8 years directly with village communities promoting sanitation and on rural livelihood issues in Madhya Pradesh..

The workshops consisted of the following broad elements:

1. Trend analysis of the past 30-40 years to observe changes in village resources and their causes
2. Mapping of water resources and village to spatially contextualise the issues
3. Water budgeting to assess water demand and availability
4. Identifying actions to ensure water sustainability

Summary of Workshop Activities

Karadavat, Petlavad Block: This village has a population of around 7000 people, with 50% belonging to the Bhil tribe. Drinking water has been provided to them for the past 11 years from the PHED through pipes and tapped connections. Like most tribal villages, this one too is spread out in several hamlets & fallias) and only the main village centre with non-tribal population that is economically better off has access to this piped water facility. The tribal hamlets have hand-pumps and public stand-posts for drinking water. Within the village centre too, only 227 families have availed the facility of individual tap connections and they too hardly pay the monthly rent for it, according to the sarpanch. The panchayat ends up paying on their behalf, which amounts to the entire village subsidizing these few richer families for facilities the rest of the village cannot afford. Most families have land here, except for a few, who do labour. This was highlighted by the following exercises done with the residents here –

Trend Analysis:(complete information under all categories was not possible to get)
Population – the total population of this village was 1500, 30 years ago, 4000, 15 years ago and is 7000 today.

Open Wells – 30 years back the village had 20-25 wells, out of which 2 were used for drinking and the rest for irrigation. 15 years back, the number rose to 40, with those being used for drinking water remaining the same. All new additions were used for irrigation.

Hand Pumps – 30 years back the village didn't have any hand pumps. 15 years back, around 5

hand pumps were present in the village. Today, the village possesses 30 hand pumps, out of which 6 are dry. Hand pumps are used purely for domestic purposes and drinking.

Tube Wells – no tube wells were dug 30 years back, but 15 years back the village got 2 tube wells for irrigation. Today the number is as high as 150, but many have dried up owing to the uninhibited draft of groundwater in the recent past.

Surface Water Bodies – The village has 3 ponds and 1 stream on which 2 check dams already exist. These are used mostly for irrigation and cattle.

Rainfall – 30-15 years back, rainfall was about 40 inches, over 4 months. Today this has halved, both in time duration of the monsoon as well as quantity.

Agriculture – the major crops grown 30-15 years back were chana, groundnut, moong, wheat, jowar, rice, til, cotton and chilly.

Livestock – the population of cattle herded by each family has drastically fallen over the years due to insufficient fodder and water. From 2500 cattle 30 years back, it came down to 1250 15 years ago and currently numbers at 500 only.

Main Emerging Trends:

1. While the population has increased more than 4-fold in the past 30 years, all resources have displayed a decline in quantity, even as efforts have been made to tap new sources, especially for water.
2. Agricultural land has increased at the cost of pasture and common lands, as well as forests.
3. Owing to the above reason, livestock population has drastically fallen, even with a huge jump in the number of families. This has diminished a source of income for the village.
4. Agriculture today is heavily dependent upon fertilizers, pesticides, GM/hybrid seeds and irrigation as soil fertility has come down and agri-business firms have pushed for seed varieties that require these inputs. Today no crop grows without excessive irrigation and fertilizers, while earlier this was not the case. Seeds today are procured from the market, while earlier the crop itself would yield seeds for the next sowing season. Several indigenous varieties have been stopped completely and replaced by hybrid varieties are different cash crops. The overall investment in agriculture has gone up manifold.

Mapping the Village: The participants drew a map of their village – the hamlets, roads, natural resources like stream, ponds, hills etc., wells, hand pumps and all other major land marks. This was done to spatially contextualize the issues at hand and plan interventions accordingly.

Planning Appropriate Interventions: Based on the discussions in the workshop, the participants made suggestions for making the village water-secure. While many possibilities came up, there was much debate on what is actually feasible, given the paucity of funds and the difficulty in accessing government schemes. The following interventions were decided upon –

1. Access PHED funds for building check dams on the local stream for retaining the water in the watershed.
2. Access PHED funds for rooftop rainwater harvesting in pucca buildings.

Mohankot, Petlavad Block: This village has a population of around 7000 people in 1500 households, with 95% belonging to the Bhil tribe. Spread out in 11 hamlets, it encompasses a vast region, often hampering communication between different hamlets. In fact, a pond dug between hamlets has caused severe transportation issues as now people have to walk around it, which is a long distance, making it difficult to access schools and other institutions located in the hamlet across. The village is flanked by completely barren hills and degraded land. Since all this land is lying unused, there is vast potential for large-scale rainwater harvesting through watershed development like contour trenching, ponds, afforestation etc. the soil and ground type here is largely rocky, preventing rainwater from seeping into the ground. However, storage in ponds is an

option.

Trend Analysis: (complete information under all categories was not possible to get)
Population – the total population of this village was 2500, 40 years ago and is 7000 today.

Open Wells – 40 years back the village had 12 wells, which were used for drinking and domestic purposes only. 15 years back, the number rose to 25, out of which 15 were used for irrigation. Only 10 of them had water in them all year round. Today the village possesses 50 wells, 10 of which have water in them all year round. All the wells are now used for irrigation.

Hand Pumps – 40 years back the village didn't have any hand pumps. 30 years ago, the village got its 1st hand pump and 15 years back, around 7 hand pumps were present in the village. Today, the village possesses 22 hand pumps, out of which 10 provide water throughout the year. Hand pumps are used purely for domestic purposes and drinking. Some of them are fluoride affected, but the villagers continue to use them for drinking.

Tube Wells – no tube wells were dug 40 years back. Today also the number is low – 2 –due to poverty and the inability to invest in them. For this reason, overdraft of groundwater has been prevented here to a great extent.

Surface Water Bodies – 40 years back the village didn't have any ponds. 20 years back, it got 2 ponds, built by the irrigation department, but used for all purposes. Today the village has 8 small ponds built under the NREGA other schemes, apart from the 2 existing ponds of a bigger size. Only the 2 big ones have water throughout the year. 2 streams also water this village, one of which has water for a very short time, the other flowing for a longer time. They started drying up more 10 years back.

Rainfall – 40-15 years back, rainfall was for 4 months. Today it is restricted to only 2 months.

Agriculture – 40 years ago agriculture was only rainfed with rice, cotton, til, moong, jowar and makka growing during the monsoon, and chana (which doesn't need any water) during the winter. Today agriculture is heavily irrigated and is throughout the year. Soybean and wheat has been added, while chana has been removed as today that too requires watering.

Livestock – the population of cattle herded by each family has drastically fallen over the years due to insufficient fodder and water. From 8 cattle/household 40 years back, it has come down to 2/household today.

Main Emerging Trends: (they are the same as those observed in the previous village)

1. While the population has more than doubled in the past 40 years, all resources have displayed a decline in quantity, even as efforts have been made to tap new sources, especially for water.
2. Agricultural land has increased at the cost of pasture and common lands, as well as forests.
3. Owing to the above reason, livestock population has drastically fallen, even with a huge jump in the number of families. This has diminished a source of income for the village.
4. Agriculture today is heavily dependent upon fertilizers, pesticides, GM/hybrid seeds and irrigation as soil fertility has come down and agri-business firms have pushed for seed varieties that require these inputs. Today no crop grows without excessive irrigation and fertilizers, while earlier this was not the case. Seeds today are procured from the market, while earlier the crop itself would yield seeds for the next sowing season. Several indigenous varieties have been stopped completely and replaced by hybrid varieties are different cash crops. The overall investment in agriculture has gone up manifold.

Mapping the Village: The participants drew a map of their village – the hamlets, roads, natural resources like stream, ponds, hills etc., wells, hand pumps and all other major land marks. This was done to spatially contextualize the issues at hand and plan interventions accordingly.

Planning Appropriate Interventions: Based on the discussions in the workshop, the participants made suggestions for making the village water-secure. The following interventions were decided upon –

1. To build check dams on the 2 streams.
2. To build farm ponds for irrigations in the fields.
3. Contour trenching to be done on all the denuded hilly land around the village.
4. Afforestation to be taken up for increasing rainfall as well as preventing soil erosion.

Ramgarh, Petlawad Block: Situated on a hill, this village has suffered from water scarcity for aeons. It has a population of around 2100 people in 470 households, with 50% belonging to the Bhil tribe. The village gets piped water from the PHED, which supplies both, sweet drinking water and saline/brackish non-potable water in the same pipe on different days. There is no system to this and sweet water is supplied based on its availability, which varies from month to month. Generally in the monsoon, potable water is supplied once in 4 days and in the summer, once in 2 weeks. This is stored by the residents in large drums. On finishing this, they procure water from other sources like open wells, hand pumps, tankers etc. The village is also affected by highly brackish water in all hand pumps and fluoride in some. They are expecting the Mahi river dam, 40 km away to water their village via a canal by 2013.

Trend Analysis: (complete information under all categories was not possible to get)
Population – the total population of this village was a mere 120, 40 years ago, rose to roughly 900 people, 20 years back, and is 2100 today.

Open Wells – 40 years back the village had about 6 wells, which were used for all purposes. Today the village possesses 100 wells, all of which dry up post November.

Hand Pumps – hand pumps first arrived in this village in 1985. Their number has marginally increased from 3 to 7 today. Owing to the fact that the village is situated on a hill, groundwater is rare and hand pumps have always yielded less water.

Tube Wells – the 1st tube well was introduced to this village in 1995, and today they number at just 4. Their yield is less and their water is brackish. They are therefore, hardly used for irrigation and agriculture is limited to the monsoon months alone.

Surface Water Bodies – the village has 2 small ponds that have water in them only in the monsoon. These were made by the irrigation department and are used up quickly for that very purpose. They also suffer from leakages. There is also a seasonal stream close to the village, which used to be perennial till 20 years back. A stop-dam built on it 20 years ago made water available for irrigation for a few villages around (including Karadavat, the 1st village in this series) and dried up the stream. Water from this stream used to be utilized for all purposes including drinking. Now only irrigation during the monsoon is possible from the reservoir of the dam.

Rainfall – 40-15 years back, rainfall was for 4 months and was heavy. Today it is restricted to only 1 month and is scanty. Roof-water harvesting was done on the hostel building but turned out to be a failure due to lack of maintenance.

Agriculture – this village has practised only rainfed agriculture due to water scarcity in non-monsoon months and bad quality water in tube wells. The crops grown are tomato, chilly, cotton and soybean. In non-monsoon months, 50% of the population migrates out in search of labour work.

Livestock – the population of cattle herded by each family has drastically fallen over the years due to insufficient fodder and water. From 10 cattle/household 40 years back, it has come down to 4/household today. The reason they give is pasture degeneration and encroachment for agriculture.

Main Emerging Trends:

1. While the population has increased more than 10 times in the past 40 years, all resources have displayed a decline in quantity, even as efforts have been made to tap new sources, especially for water.
2. Livestock population has drastically fallen, even with a huge jump in the number of families. This has diminished a source of income for the village.
3. Water scarcity has been an issue for this village from the beginning, but has become more acute lately.
4. The village has had interventions from government departments like ponds built by the irrigation department, piped water supply from PHED, roof-water harvesting by the panchayat, but none have been very successful due to inadequate maintenance and unsustainable sources.
5. With increasing water scarcity, groundwater extraction is bound to rise, leading to a possible increase in the incidence of fluoride as well.

Mapping the Village: The participants drew a map of their village – the hamlets, roads, natural resources like stream, ponds, hills etc., wells, hand pumps and all other major land marks. This was done to spatially contextualize the issues at hand and plan interventions accordingly.

Water Budgeting: Based on data provided by the village residents and panchayat members, water demand for drinking and domestic needs and availability of the village was calculated. It was found that the demand is a small percentage of the water available in the village via rainfall and a small portion of it can easily be harvested to meet the annual needs of the residents and their livestock.

Planning Appropriate Interventions: Based on the discussions in the workshop, the following interventions were decided upon

1. To build a check dam on the stream and reserve it only for potable uses, not for irrigation.
2. To improve, repair and increase the height of the walls of the pond.
3. Roof-water harvesting on pucca structures in the village.

Rampuria, Petlawad Block: This village has a population of around 1700 people in 412 households, with 100% belonging tribal population distributed in 5 hamlets. The scarcity of water in this village is blatantly related to the land degradation, as they villagers recall how green their currently bone-dry hillocks were 20 years ago and how rainfall has reduced since. The main occupation for this village used to be cattle herding and they had a vast amount of pasture land, which has now been encroached upon for agriculture as that is the dominant occupation now, even though it yields little income.

Trend Analysis: (complete information under all categories was not possible to get)
Population – the total population of this village was 400 people, 40 years ago and is 1700 today.

Open Wells – 40 years back the village had only 2 wells, which sufficiently supplied for all purposes. 20 years ago they had 25 wells, which continued to hold water all year round. Today the village possesses 100 wells, all of which dry up post November.

Hand Pumps – 25 years ago 2 hand pumps arrived in this village. Their number has increased to 17 today. Most of them go dry post November. They have sweet water and are used only for potable purposes.

Tube Wells – tube wells hit this village only 7 years back, and today they number at just 5. Their yield is less and are therefore hardly used for irrigation. Agriculture is limited to the monsoon months alone.

Surface Water Bodies – the village has 1 pond that used to have water throughout the year earlier but now holds water only in the monsoon. It suffers from leakages and less rainfall has limited the supply from the source. When it is dry, its land is auctioned for agriculture. There is also a seasonal

stream in the middle of the village, which used to be perennial till 10 years back. A check-dam has been built on it. Water from this stream used to be utilized for all purposes including drinking. Now only irrigation during the monsoon is possible from the reservoir of the dam.

Rainfall – 40-15 years back, rainfall was for 4 months and was heavy. Today it is restricted to only 1-2 months and is scanty.

Agriculture – this village has practised only rainfed agriculture due to water scarcity in non-monsoon months. The crops grown are cotton, lentils, makka, jowar and soybean. In non-monsoon months, 50% of the population migrates out in search of labour work and 25% of the people (those who have water available to them) grow a winter crop.

Livestock – the population of cattle herded by each family has drastically fallen over the years due to insufficient fodder and water. From a whopping 50 cattle/household, 40 years back, it has come down to 0-3/household today. The reason they give is pasture degeneration and encroachment for agriculture.

Main Emerging Trends:

1. While the population has more than doubled in the past 40 years, all resources have displayed a decline in quantity, even as efforts have been made to tap new sources, especially for water.
2. Livestock population has drastically fallen, even with a huge jump in the number of families. This has diminished a source of income for the village. From a primarily pastoral economy, they have shifted to settled agriculture when actually it is not bestowing them with high profits at all.
3. The currently dry and denuded landscape was once lush green, according to the residents here. Pastures and forests covered the hills and no agriculture was practised at all. Over time, with rising population and settled agricultural practices, people have cut down their forests in short-sightedness.
4. Depleting rainfall is directly linked to the above situation.

Mapping the Village: The participants drew a map of their village – the hamlets, roads, natural resources like stream, ponds, hills etc., wells, hand pumps and all other major land marks. This was done to spatially contextualize the issues at hand and plan interventions accordingly.

Water Budgeting: Based on data provided by the village residents and panchayat members, water demand for drinking and domestic needs and availability of the village was calculated. Here too, it was found that the demand is a small percentage of the water available in the village via rainfall and a small portion of it can easily be harvested to meet the annual needs of the residents and their livestock.

Planning Appropriate Interventions: Based on the discussions in the workshop, the following interventions were decided upon –

1. To build a check dam on the stream and reserve it only for potable uses, not for irrigation.
2. To improve, repair and deepen the pond.
3. Roof-water harvesting on pucca structures in the village.

Annexure - List of participants

	Panchayat workshop 1: Karadavat Village, 08/03/11	**Panchayat workshop 2: Mohankot Village, 09/03/11**
1	Sarju Bai Baragi	Naru Pebha
2	Jhapu Bai Amaliyar	Kalu Malji
3	Sameli Bai Hiralal	Khetubai Bijaya
4	Kanchan Bai Ambaram	Madibai Gangaliya
5	Sugara Bai Mansuri	Sukhram Bijaya
6	Ramlal Nand Muniya	Lalu Nathu
7	Sureshchand Kalusingh Vasuliya	Mangu Velji
8	Motilal Anjana	Mansingh Vasana
9	Somji Velji Muniya	Pooja Nanji
10	Dhula Naya Bhuriya	Titu Gamala
11	Sita Bai Rajaram Anjana	Bijaya Nanya
12	Bhuli Bai Rameshchand Vasuliya	Balu Nevji
13	Taku Bai Ranji	Hira Amra
14	Ramesh Kalu Amaliyar	Bhagirath Hira
15	Mangilal Bagadiram Yadav	Karu Mansingh
16	Raju Narayan Anjana	Kalu Dhanji
17	Ghasiram Anjana	Debu Bhalji
18	Kachrulal Nachulal Anjana	Taru Temla
19	Bhagilal Pannalal	Amarsingh Manna
20	Ramchandra Narayan Anjana	Rafel Naharasingh
21	Ramsingh Somaji Singhad	Balu Kavara
22	Bhanvar Lal Thavariya Singhad	Kana Malji
23	Teja Ranchod	Khumsingh Manya
24	Mansingh Sharbu	Rama Makna
25	Vikum Dhogadiya	Jogadiya Hira
26	Ramesh Hiralal	Bhura Mangu
27	Amritlal Nanuram Anjana	Kalla Hira
28	Ramaji Tejaji Bhuriya	Makhansingh Kana
29	Maganlal Kanhaiyalal Rathod	Udaysingh Varsingh
30	Bhudia Ganga Amaliyar	Pappu Khumchand
31	Mangilal Phoolsingh	Karma Bheru
32	Galiya Hira Bhuriya	Dhansingh Bhanvarsingh
33	Bharat Mangilal Anjana	Hitra Ditya

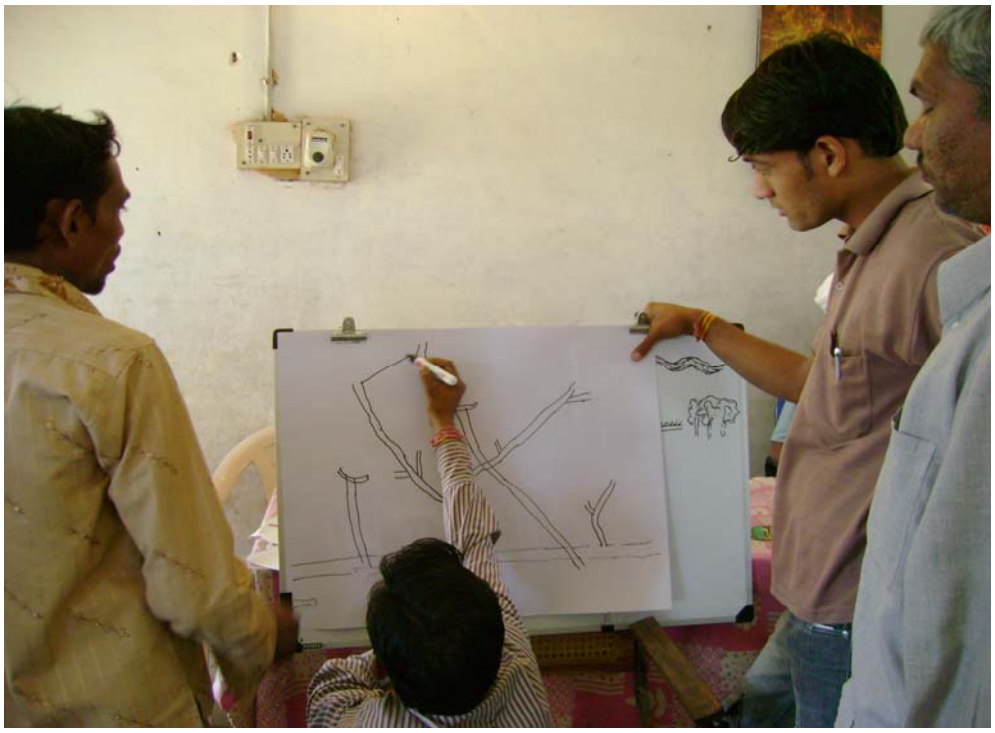
34	Balu Rama Bhuriya	Sunkibai Dhansingh
35	Mansingh Prabhu Katara	Hirka Bhana
36	Tejram Lakshman Anjana	Badiya Naharsingh
37	Jamnabai Kalu	Ambu Panna
38	Ramesh Raichand Badaha	Tolasingh Naharsingh
39	Dasharat Nanuram Bhabar	Humla Bijaya

	Panchayat workshop 3: Ramgarh Village, 10/03/11	**Panchayat workshop 4: Rampuriya Village, 11/03/11**
1	Poonmachand Ambaram	Bhuribai Damor
2	Balram Udayramji	Somji Bhuriya
3	Praveen Taad	Rajdevendra Thakur
4	Vijay Shaatilal	Shambhusingh Damor
5	Ramesh Balkrishna	Balusingh Damor
6	Ghasiram Anjana	Surtansingh Singhad
7	Lakshminarayan Kanji Patidhar	Chaganlal Bhabar
8	Amritlal Patidhar	Narayansingh Singhad
9	Rajaram Patidhar	Raisingh Singhad
10	Harishchand Patidhar	Sunil Garval
11	Vala Gamad	Govardhan Bhuriya
12	Babu Koda	Ralu Garval
13	Narayan Champalal Patidhar	Dhansingh Bhuriya
14	Poonamchand Patidhar	Devchand Bhuriya
15	Prahalad Patidhar	Shankar Dodiyar
16	Narayan Ramchandra Patidhar	Balchand Dodiyar
17	Kalavati Vasuniya	Bhagu Singhad
18	Pooja Devda	Nagu Damor
19	Mangudi Bai	Sukhlal Bhuriya
20	Nandibai Gamad	Kachariya Balu
21	Kala Gamad	Bhimasingh Garval
22	Sangeeta Patidhar	Ramesh Dodiyar
23	Avantabai Malvi	Bhanji Garval
24	Ramtubai Gamad	
25	Samdubai Bhuriya	
26	Gendibai Metha	
27	Harjibai Ninama	
28	Nanudibai Ninama	
29	Ramesh Bhuriya	
30	Narayan Damor	
31	Sukhlibai Deva	

Annexure: Photographs

Village Karadavat

Village Mohankot



Village Ramgarh

Dry and denuded lands (top) and local pond of the village, used for all purposes (above)

Village Rampuriya

The pond's land is auctioned off in the summer for agriculture